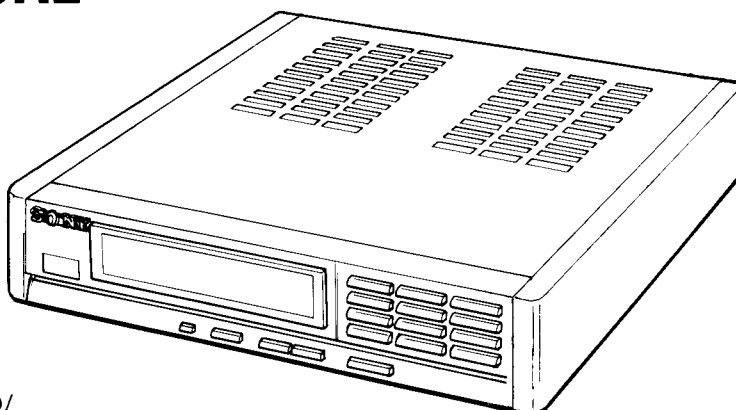


ST-707RM

SERVICE MANUAL

AEP Model



. ST-707RM is the FM STEREO/
FM-AM TUNER in MHC-2000/
MHC-3000.

SPECIFICATIONS

System FM stereo, FM/AM superheterodyne tuner
Quartz-locked PLL digital synthesizer system

General

Dimensions Approx. 245 × 55 × 240 mm (w/h/d)
(9³/₄ × 2¹/₄ × 9¹/₂ inches)
incl. projecting parts and controls
Weight Approx. 1.0 kg (2 lb 4 oz) net

FM tuner section

Tuning range 87.5 to 108 MHz
Antenna terminals 75 ohms unbalanced
Intermediate frequency 10.7 MHz
Usable sensitivity 2.3 μ V (S/N = 30 dB/75 ohms)

MW/LW tuner section

		MW	LW
Tuning range		531 – 1,602 kHz (except Italy) 522 – 1,611 kHz (for Italy)	153 – 281 kHz (except Italy) 144 – 288 kHz (for Italy)
Antenna		Built-in ferrite bar antenna External antenna terminal	
Usable sensitivity	Built-in ferrite bar antenna	250 μ V/m (999 kHz)	500 μ V/m (230 kHz)
	External antenna	100 μ V (999 kHz)	150 μ V (230 kHz)
Signal-to-noise ratio		52 dB (50 mW/m)	
Harmonic distortion		0.3% (50 mV/m, 400 Hz)	



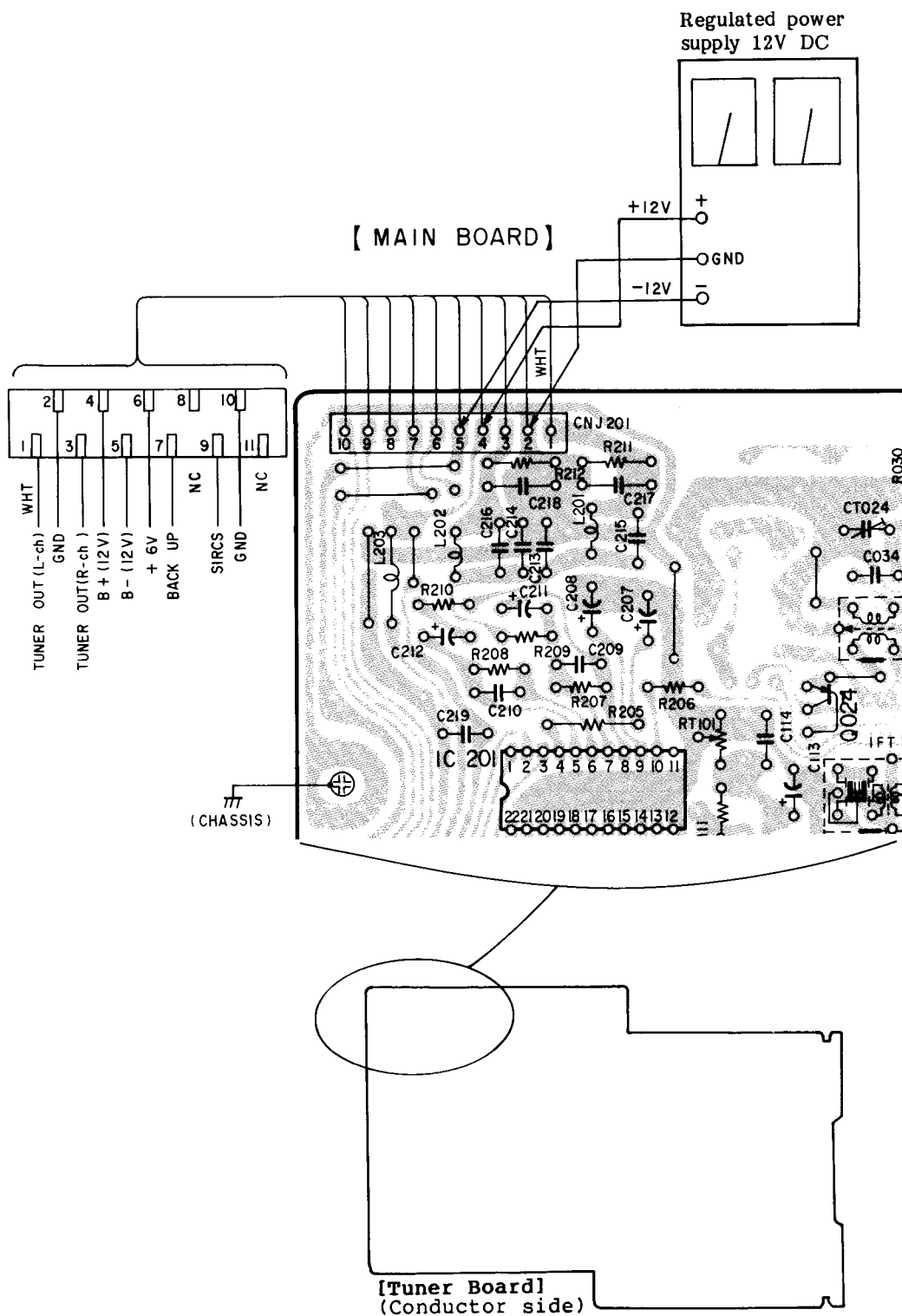
FM STEREO/FM-AM TUNER
SONY®

REPAIRING PRECAUTION

[To apply B+ voltage]

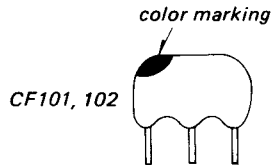
The power of this units is fed from other unit.

When the unit operates individually, connect the regulated power supply to the point as shown in the below figure.



Note on Ceramic Filter (CF101, 102) Replacement and Diode D314, 315 Connection.

This set employs two ceramic filters (CF101, 102) which should have the same color marking to identify their center frequency. Therefore FM IF offset adjustment by diodes (D314, 315) connection is necessary to match the center frequency of the ceramic filters used with FM intermediate frequency.



○: connect
X: not connect

Ceramic filter		D314, 315 connection		FM intermediate frequency (MHz)
Color mark	Center frequency (MHz)	※A (D314)	※B (D315)	
White	10.750	○	X	10.750
Red	10.700	X	X	10.700
Black	10.650	X	○	10.650

FM intermediate frequency is determined by the three types as shown above. Ceramic filters of same center frequency, i.e., of same color coding should be used for CF101 and CF102.

When replacing the ceramic filters, perform the FM Discriminator Adjustment.

WARNING !!

ADVARSEL!

Lithiumbatteri – Eksplosionsfare
Udskiftning må kun foretages
af en sagkyndig, og som
beskrevet i servicemanualen.

LITHIUM BATTERY

SHOULD ONLY BE CHANGED BY TECHNICAL PERSONNEL. THERE IS A RISK FOR EXPLOSION AT A WRONG HANDLING.

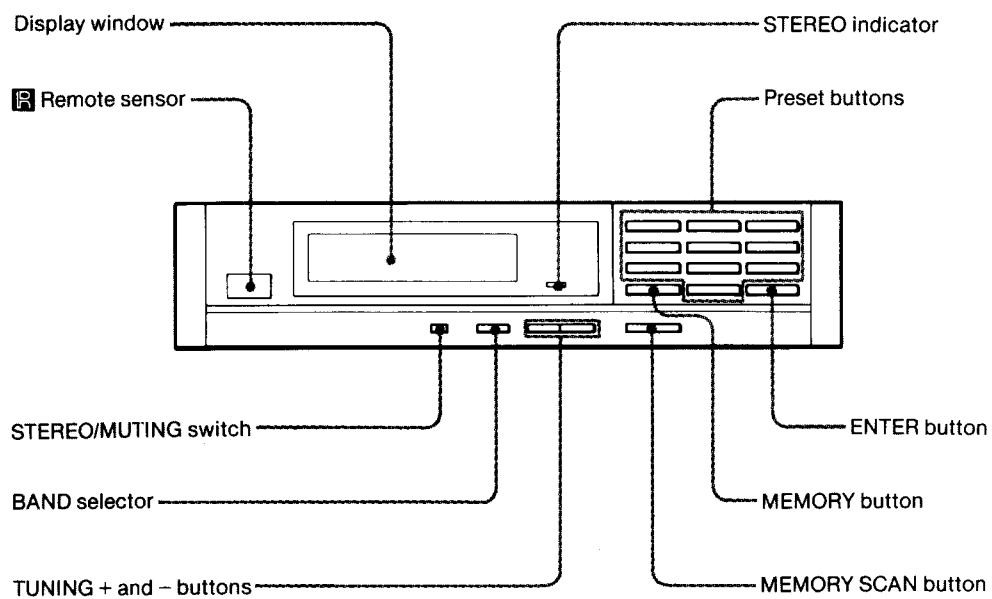
“Batteriet må kun udskiftes med et batteri af samme fabrikat og type”.

Because of the risk for explosion the battery must be replaced with the same type and manufacture.

MODEL IDENTIFICATION

SONY® MODEL NO. **ST-707RM**
FM STEREO/FM-AM TUNER

PARTS IDENTIFICATION



SECTION 1

ELECTRICAL ADJUSTMENTS

FM SECTION

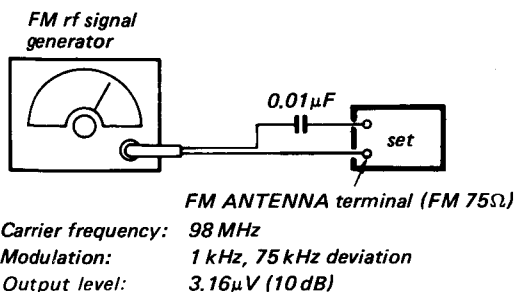
Setting:

BAND selector switch: FM

Note: FM discriminator alignment should be made after FM tracking adjustment.

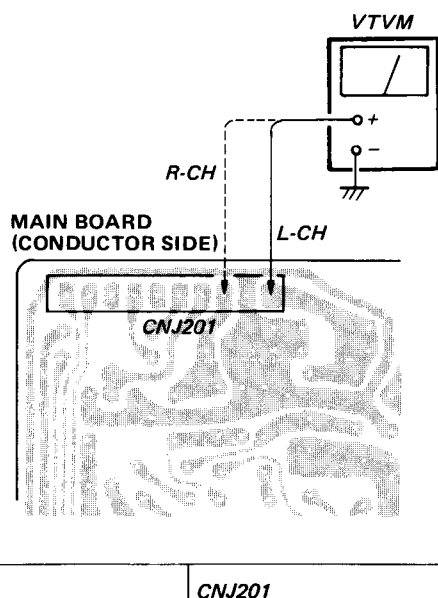
FM Tracking Adjustment

Setting:



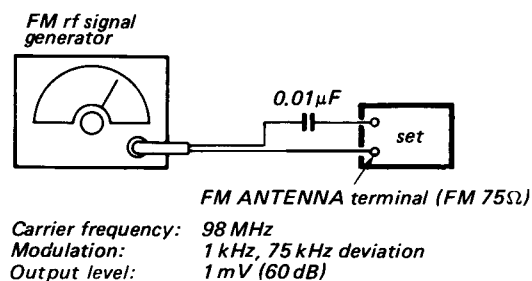
Procedure:

1. Push TUNING (+, -) button for 98 MHz.
2. Approach L002 and L003 not to contact each other.
3. Adjust L001 and L003, and repeat the adjustment 2 - 3 times for maximum VTVM reading.

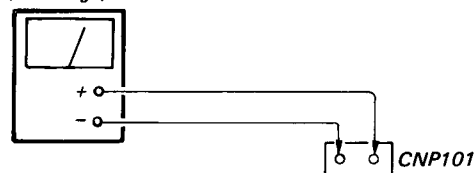


FM Discriminator Alignment (NULL Check)

Setting:

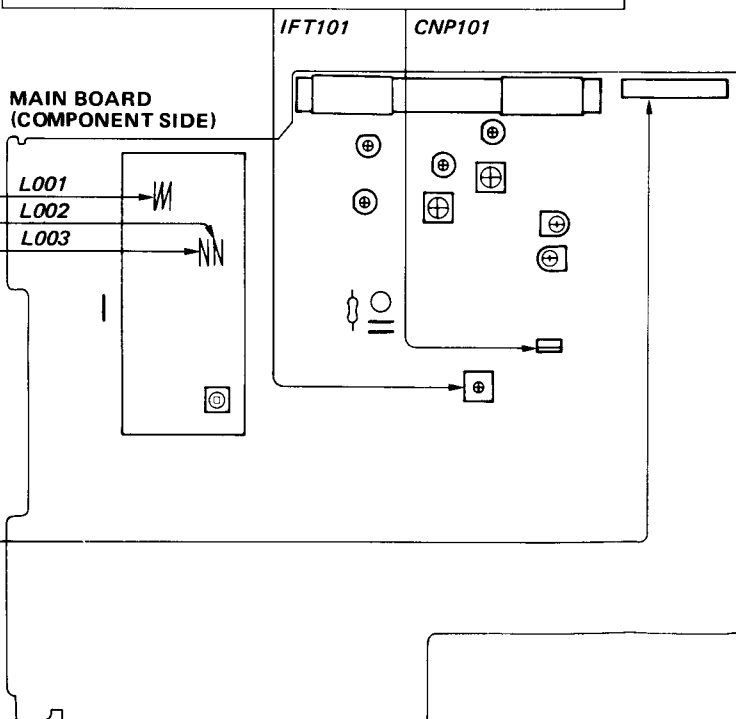


VOM
(DC range)



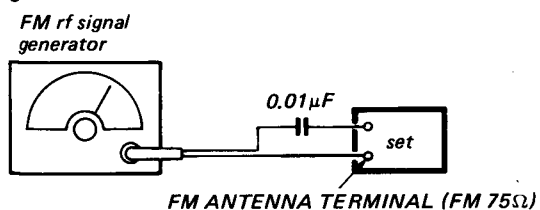
Procedure:

1. Push the TUNING (+, -) button for 98 MHz.
2. Adjust IFT101 for 0 V reading on the VOM.



FM OSC Voltage Adjustment

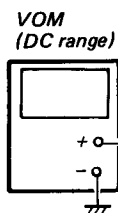
Setting:



Carrier frequency: 108 MHz
 Modulation: 1 kHz, 75 kHz deviation
 Output level: as low as possible

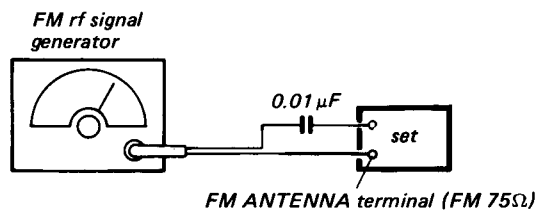
Procedure:

1. Push the TUNING (+, -) button for 108 MHz.
2. Adjust L005 for 8 – 8.5 V reading on the VOM.



FM TUNED Indication Lighting Level Adjustment

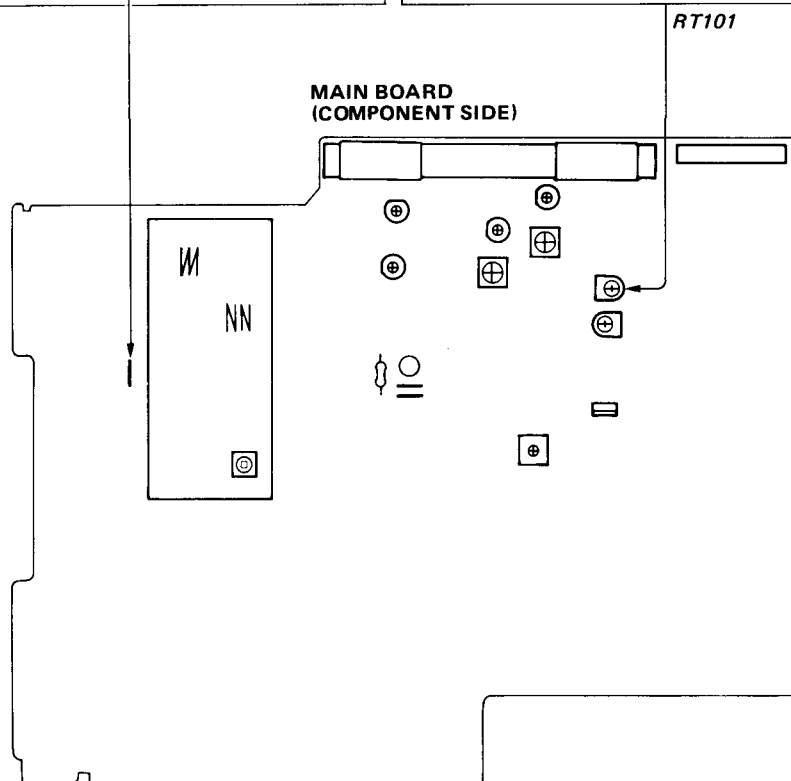
Setting:



Carrier frequency: 98 MHz
 Modulation: 1 kHz, 75 kHz deviation
 Output level: 22.4 μV (27 dB)

Procedure:

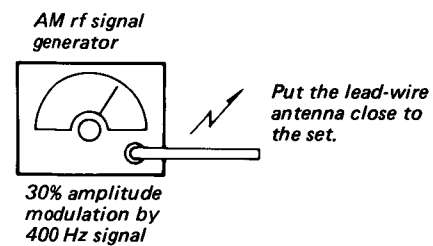
1. Confirm that the MUTING indicator lights up on the display window.
2. Tune the set to 98 MHz.
3. Adjust RT101 so that the TUNED indicator goes on.



AM SECTION

Setting:

BAND selector switch: MW or LW

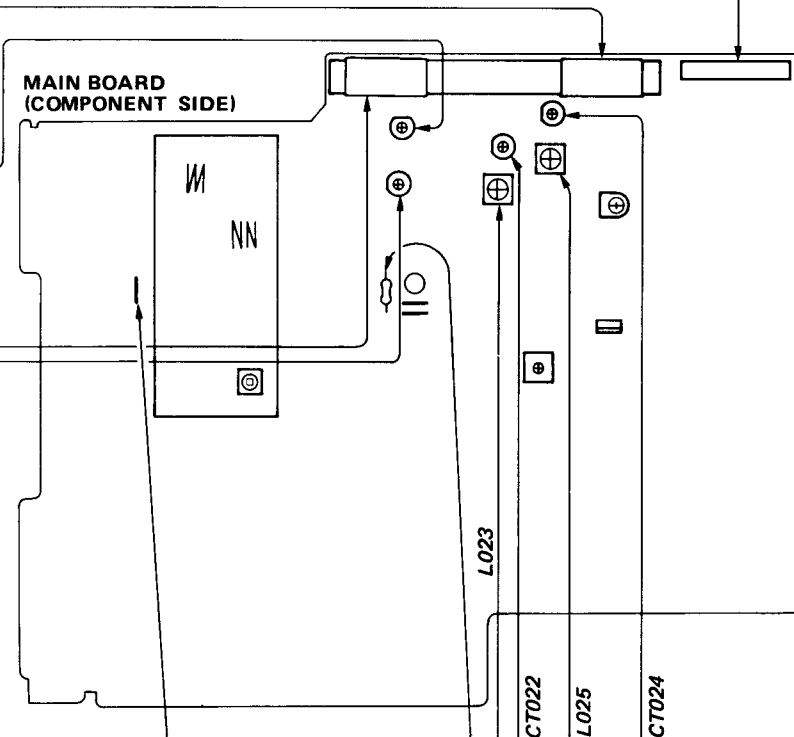
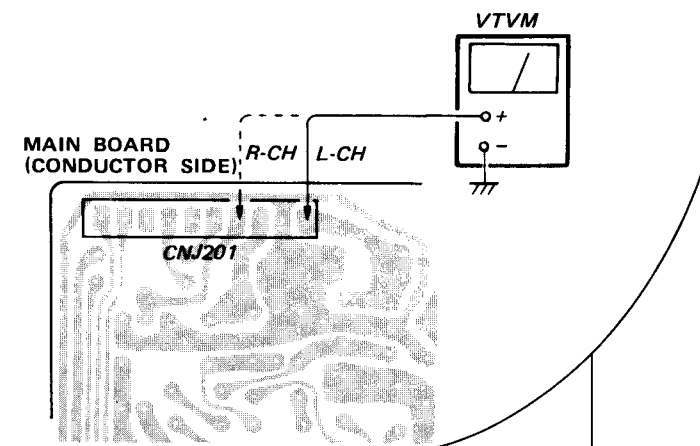


- Repeat the procedures in each adjustment several times, and the OSC voltage and tracking adjustments should be finally done by the trimmer capacitors.

• Perform after LW TRACKING ADJUSTMENT.

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
603 kHz	L022
1,404 kHz	CT021

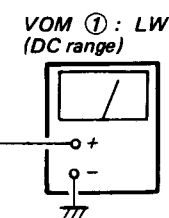
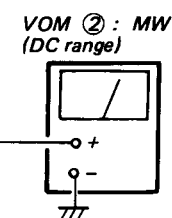
LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
162 kHz	L022
270 kHz	CT023



MW/LW OSC Voltage Adjustment

Procedure:

1. Set BAND selector switch to MW.
2. Push TUNING (+, -) button for 522 kHz. Adjust L023 for 1 - 1.1 V VOM ② reading.
3. Push the button for 1,611 kHz. Adjust CT022 for 8 - 8.5 V VOM ② reading.
4. Set BAND selector switch to LW.
5. Push TUNING (+, -) button for 144 kHz. Adjust L025 for 1 - 1.1 V VOM ① reading.
6. Push the button for 288 kHz. Adjust CT024 for 8 - 8.5 V VOM ① reading.



MEMO

SECTION 2

DIAGRAMS

2-1. PRINTED WIRING BOARDS

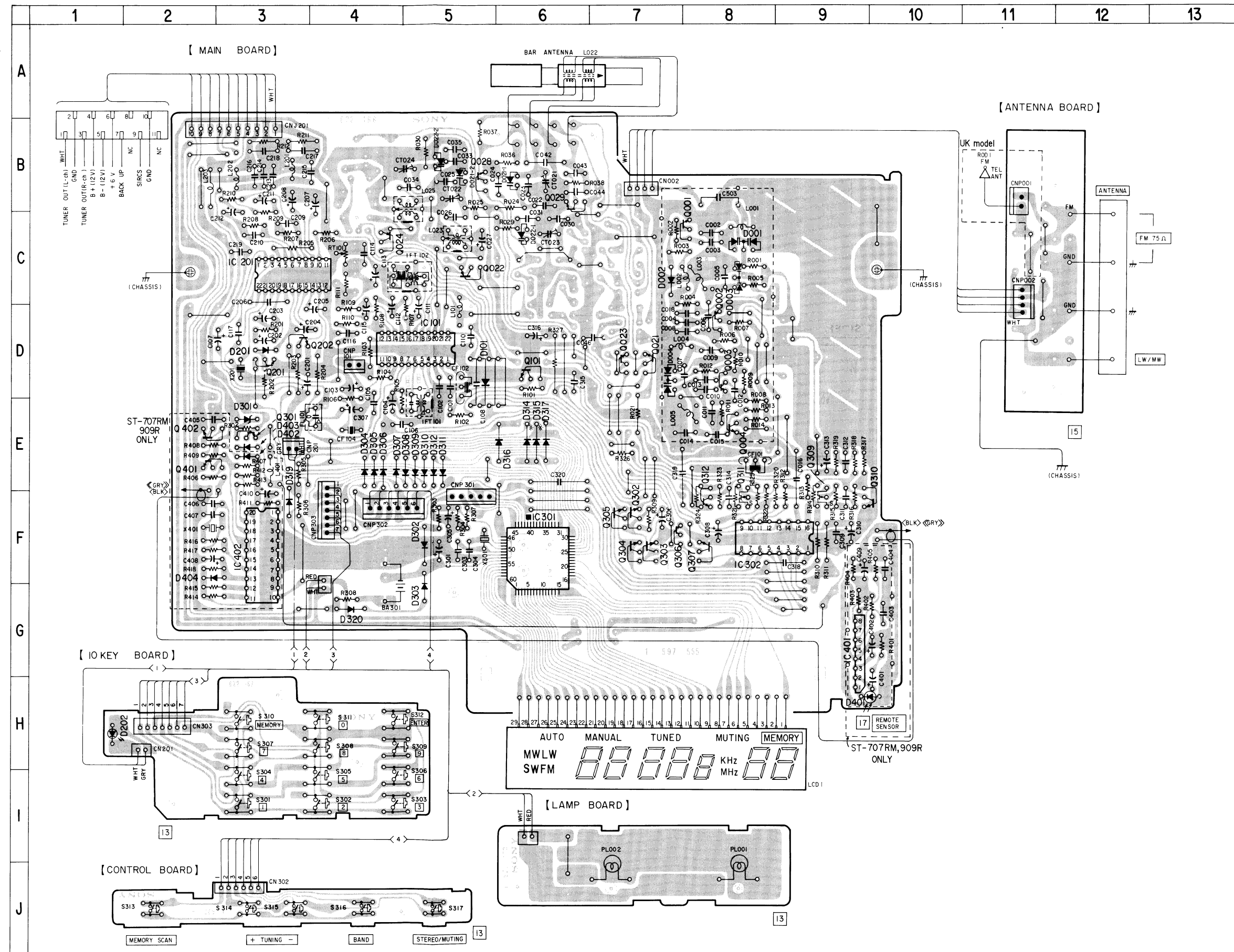
. See page 14 for Semiconductor Lead Layouts.

Note:

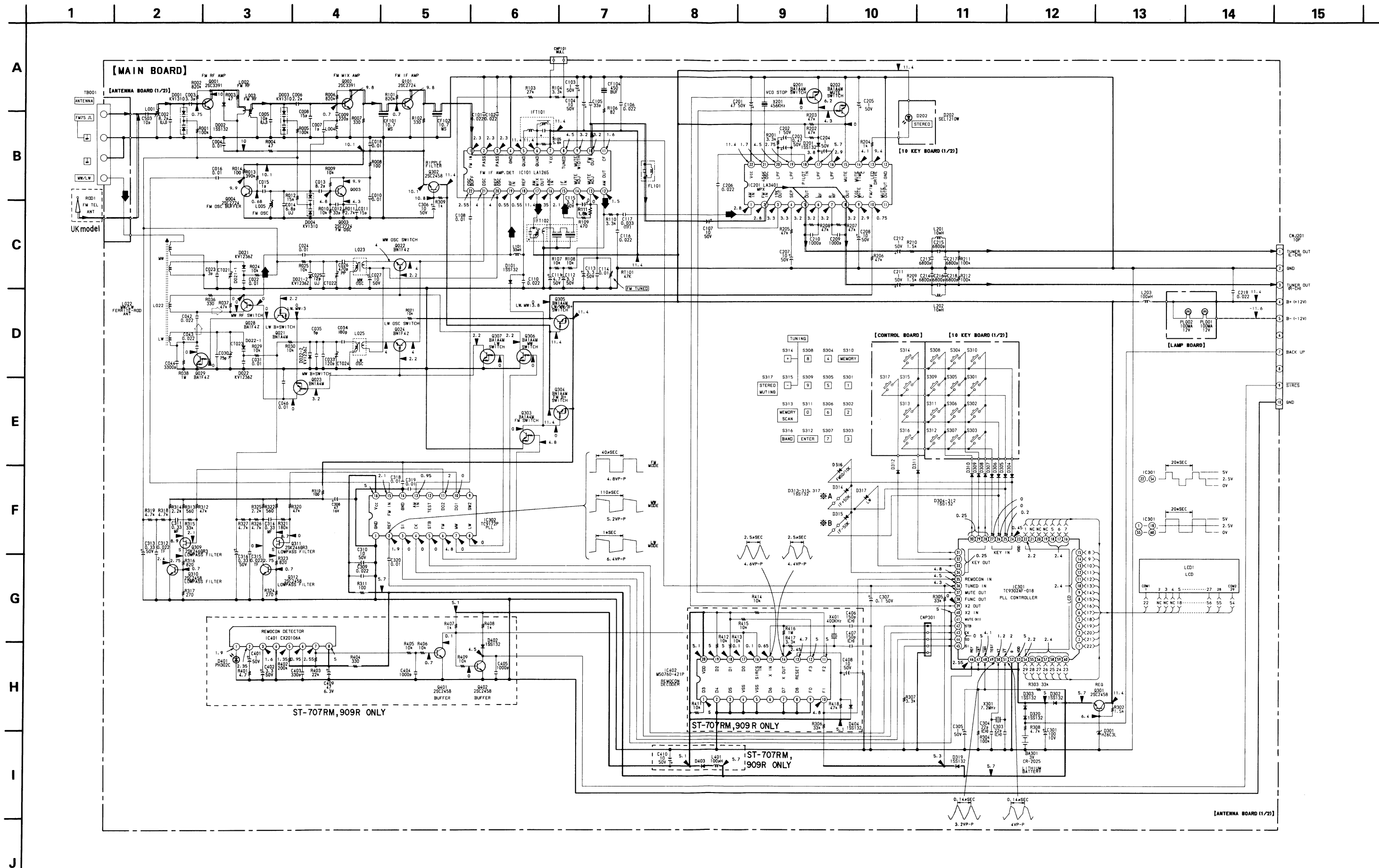
- ■ : parts mounted on the conductor side.
- [] ← indicates side identified with part number.

. Semiconductor Location

Ref. No.		Ref. No.	
IC101	D-4	D004	D-7
IC201	C-3	D021-1	B-5
IC301	F-6	D021-2	B-5
IC302	F-8	D022-1	C-6
IC401	G-9	D022-2	B-5
IC402	F-3	D101	D-5
Q001	C-7	D201	D-3
Q002	D-8	D202	H-1
Q003	D-8	D301	E-3
Q004	E-8	D302	F-5
Q021	D-7	D303	F-5
Q022	C-5	D304	E-4
Q023	D-7	D305	E-4
Q024	C-4	D306	E-4
Q028	B-5	D307	E-4
Q029	B-6	D308	E-4
Q101	D-6	D309	E-4
Q201	D-3	D310	E-5
Q202	D-3	D311	E-5
Q301	E-3	D312	E-5
Q302	F-7	D314	E-6
Q303	F-7	D315	E-6
Q304	F-7	D316	E-5
Q305	F-7	D317	E-6
Q306	F-7	D319	F-3
Q307	F-7	D320	G-4
Q309	F-9	D401	H-9
Q310	F-9	D402	E-3
Q311	E-8	D403	E-3
Q312	E-8	D404	F-2
Q401	E-2		
Q402	E-2		
D001	C-8		
D002	C-7		
D003	C-8		



2-2. SCHEMATIC DIAGRAM . See page 13 for note.



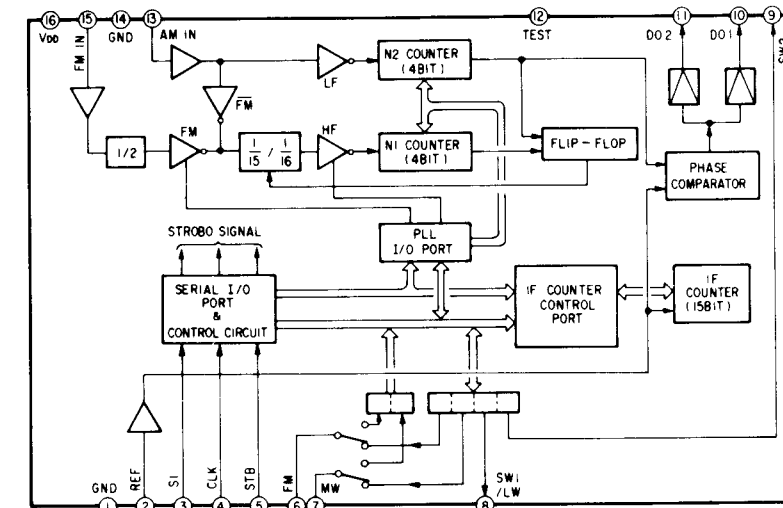
Note:

- All capacitors are in μF unless otherwise noted. pF: μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}W$ or less unless otherwise specified.
- Δ : internal component.
- *A-B: See page 3 "Note on ceramic filter replacement and diode connection".
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under detuned conditions with a VOM (50k Ω/V).
- No Mark: FM Mode
- Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken to ground in no-signal mode by using oscilloscope.
- Voltage variations may be noted due to normal production tolerances.
- --- : B+ bus.
- --- : B- bus.
- $\square$: adjustment for repair.
- $\rightarrow$: FM signal path.
- $\rightarrow$: MW signal path.
- $\rightarrow$: LW signal path.

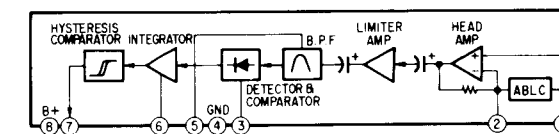
Switches:

Ref. No.	Switch	Position
S301	1	OFF
S302	2	OFF
S303	3	OFF
S304	4	OFF
S305	5	OFF
S306	6	OFF
S307	7	OFF
S308	8	OFF
S309	9	OFF
S310	MEMORY	OFF
S311	0	OFF
S312	ENTER	OFF
S313	MEMORY SCAN	OFF
S314	TUNING +	OFF
S315	TUNING -	OFF
S316	BAND	OFF
S317	STEREO MUTING	OFF

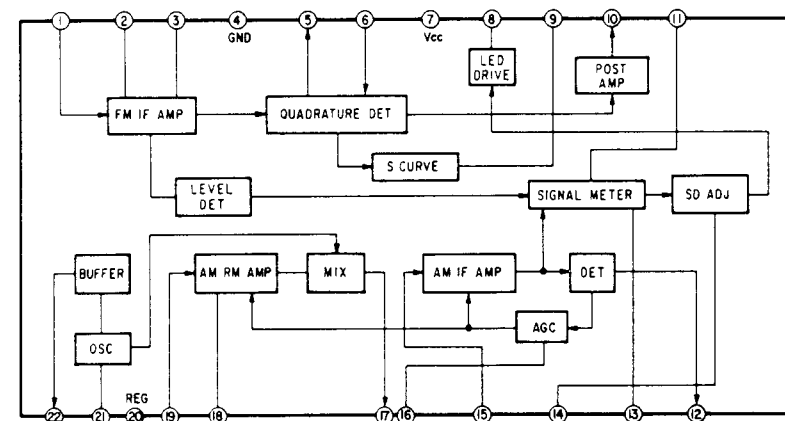
IC302 TC9172P



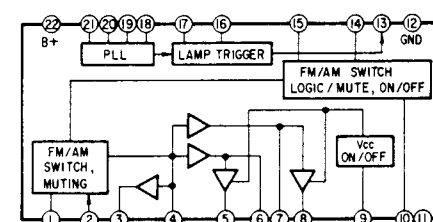
IC401 CX20106A



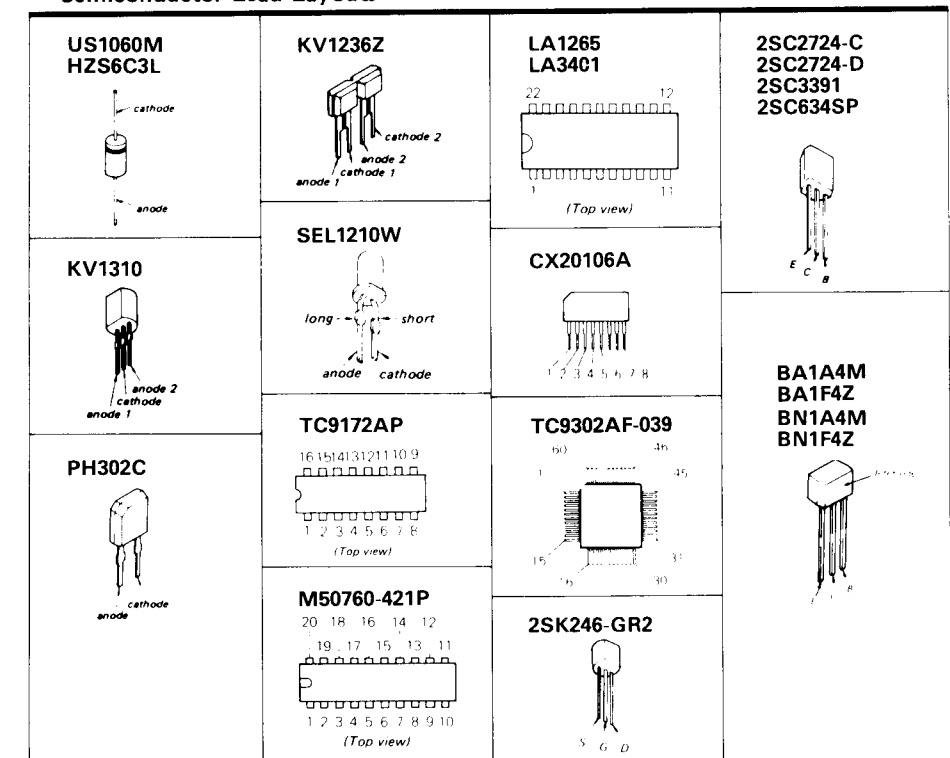
IC101 LA1265



IC201 LA3401



Semiconductor Lead Layouts



SECTION 3

EXPLODED VIEWS

NOTE:

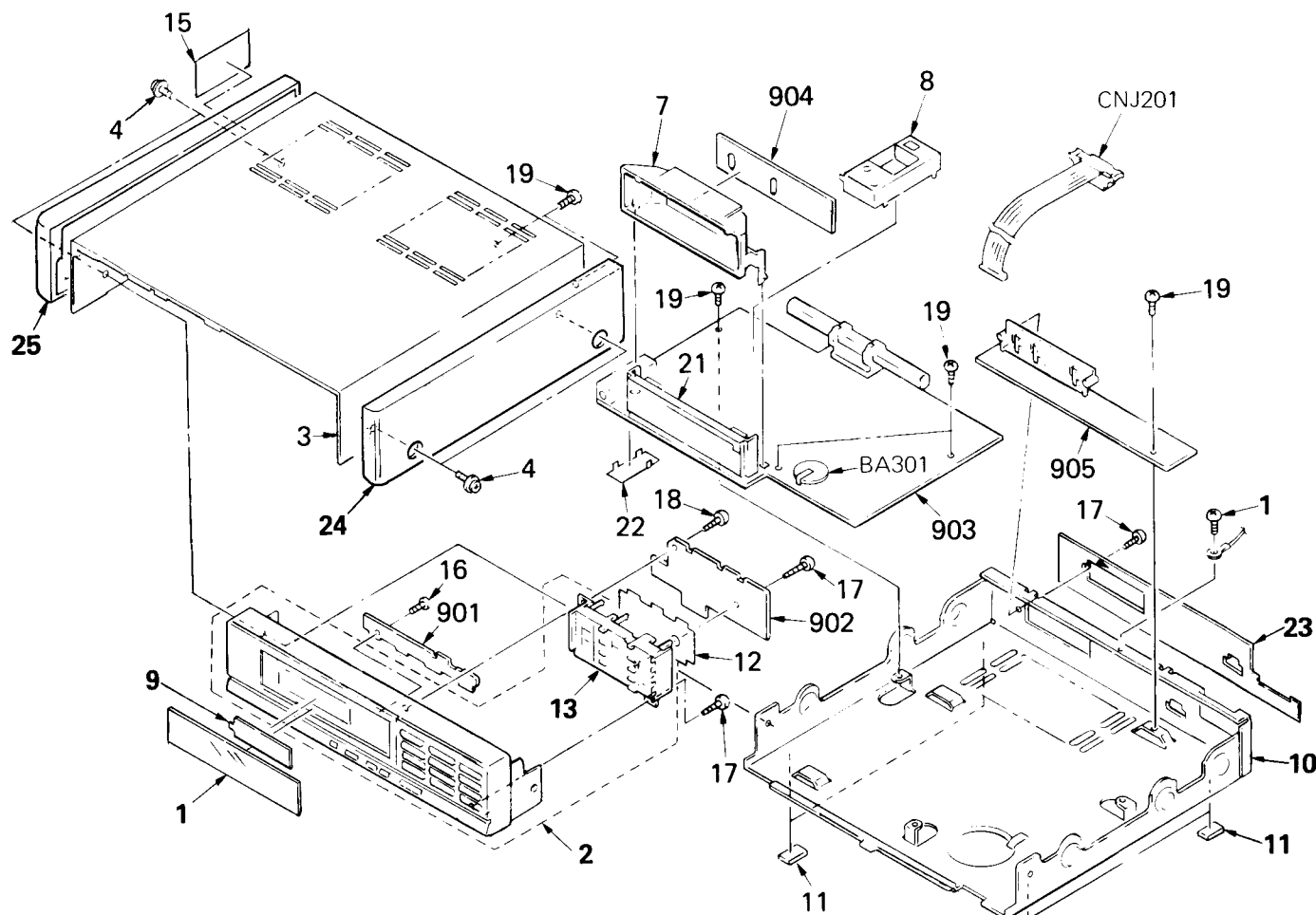
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
Example:
(RED) ... KNOB, BALANCE (WHITE)

↑
 Cabiner's Color

↑
 Parts Color

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.



<u>No.</u>	<u>Part No.</u>	<u>Description</u>
1	4-920-874-01	PLATE (ST), ORNAMENTAL
2	X-4919-643-1	PANEL ASSY, FRONT
3	4-920-137-01	CASE
4	4-886-821-51	SCREW (CASE) (M3X14)
5	-----	
6	*4-909-705-01	PLATE, SHIELD
7	*4-917-275-01	HOUSE, LAMP
8	*4-874-704-01	CASE, SHIELD
9	4-920-872-01	PLATE (ST), INDICATION
10	*4-919-617-01	CHASSIS
11	4-919-608-01	FOOT
12	*4-919-607-01	SPACER
13	*4-919-614-01	RETAINER, BUTTON
15	*4-922-718-01	LABEL, MODEL NUMBER (AE)
16	7-685-133-19	SCREW +P 2.6X6 TYPE2 SLIT
17	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S

<u>No.</u>	<u>Part No.</u>	<u>Description</u>
18	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S
19	7-682-147-01	SCREW +BVIT 3X6 (S)
20	-----	
21	*4-909-633-01	ILLUMINATOR
22	*4-920-149-01	PLATE (A), SHIELD
23	*4-919-613-71	COVER, REAR
24	4-922-759-01	PLATE (A-RIGHT), SIDE
25	4-922-760-01	PLATE (A-LEFT), SIDE
901	*1-622-168-11	PC BOARD, CONTROL
902	*1-622-167-11	PC BOARD, 10 KEY
903	*A-4351-646-A	MOUNTED PCB, TUNER
904	*1-622-170-11	PC BOARD, LAMP
905	*1-622-169-11	PC BOARD, ANTENNA
BA301	1-528-120-00	BATTERY, LITHIUM (CR-2025)
CNJ201	1-559-816-11	CORD (WITH CONNECTOR) 10P

SECTION 4

ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:MF: μ F, PF: μ F.**RESISTORS**

- All resistors are in ohms.
- F: nonflammable

COILS

- MMH: mH, UH: μ H

SEMICONDUCTORSIn each case, U: μ , for example:UA...: μ A..., UPA...: μ PA...,UPC...: μ PC, UPD...: μ PD...

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description					Ref.No.	Part No.	Description				
901	*1-622-168-11	PC BOARD, CONTROL					C110	1-101-005-00	CERAMIC	0.022MF			50V
902	*1-622-167-11	PC BOARD, 10 KEY					C111	1-124-927-11	ELECT	4.7MF	20%		50V
903	*A-4351-646-A	MOUNTED PCB, TUNER					C112	1-123-382-00	ELECT	3.3MF	20%		50V
904	*1-622-170-11	PC BOARD, LAMP					C113	1-123-382-00	ELECT	3.3MF	20%		50V
905	*1-622-169-11	PC BOARD, ANTENNA					C114	1-161-379-00	CERAMIC	0.01MF	20%		16V
BA301	1-528-120-00	BATTERY, LITHIUM (CR-2025)					C115	1-123-382-00	ELECT	3.3MF	20%		50V
C002	1-162-198-31	CERAMIC	8.2PF	10%		50V	C116	1-101-005-00	CERAMIC	0.022MF			50V
C003	1-162-193-31	CERAMIC	3.3PF	10%		50V	C117	1-130-489-00	MYLAR	0.033MF	5%		50V
C004	1-161-379-00	CERAMIC	0.01MF	20%		16V	C201	1-124-477-11	ELECT	47MF	20%		16V
C005	1-162-199-31	CERAMIC	10PF	5%		50V	C202	1-124-499-11	ELECT	1MF	20%		50V
C006	1-162-191-31	CERAMIC	2.2PF	10%		50V	C203	1-124-902-00	ELECT	0.47MF	20%		50V
C007	1-162-187-31	CERAMIC	1PF	20%		50V	C204	1-124-499-11	ELECT	1MF	20%		50V
C008	1-162-203-31	CERAMIC	15PF	5%		50V	C205	1-124-499-11	ELECT	1MF	20%		50V
C009	1-162-286-31	CERAMIC	220PF	10%		50V	C206	1-161-494-00	CERAMIC	0.022MF	30%		25V
C010	1-161-379-00	CERAMIC	0.01MF	20%		16V	C207	1-123-875-11	ELECT	10MF	20%		50V
C011	1-162-203-31	CERAMIC	15PF	5%		50V	C208	1-123-875-11	ELECT	10MF	20%		50V
C012	1-162-211-31	CERAMIC	33PF	5%		50V	C209	1-102-074-00	CERAMIC	0.001MF	10%		50V
C013	1-162-198-31	CERAMIC	8.2PF	10%		50V	C210	1-102-074-00	CERAMIC	0.001MF	10%		50V
C014	1-162-197-31	CERAMIC	6.8PF	10%		50V	C211	1-124-499-11	ELECT	1MF	20%		50V
C015	1-162-187-31	CERAMIC	1PF	20%		50V	C212	1-124-499-11	ELECT	1MF	20%		50V
C016	1-161-379-00	CERAMIC	0.01MF	20%		16V	C213	1-161-329-00	CERAMIC	0.0068MF	20%		16V
C018	1-161-379-00	CERAMIC	0.01MF	20%		16V	C214	1-161-329-00	CERAMIC	0.0068MF	20%		16V
C022	1-161-379-00	CERAMIC	0.01MF	20%		16V	C215	1-161-329-00	CERAMIC	0.0068MF	20%		16V
C023	1-102-936-00	CERAMIC	3PF	0.25PF		50V	C216	1-161-329-00	CERAMIC	0.0068MF	20%		16V
C024	1-161-379-00	CERAMIC	0.01MF	20%		16V	C217	1-161-329-00	CERAMIC	0.0068MF	20%		16V
C025	1-102-949-00	CERAMIC	12PF	5%		50V	C218	1-161-329-00	CERAMIC	0.0068MF	20%		16V
C026	1-130-014-00	FILM	470PF	5%		50V	C219	1-101-005-00	CERAMIC	0.022MF			50V
C027	1-123-875-11	ELECT	10MF	20%		50V	C301	1-124-443-00	ELECT	100MF	20%		10V
C030	1-101-890-00	CERAMIC	75PF	5%		50V	C303	1-102-959-00	CERAMIC	22PF	5%		50V
C031	1-161-379-00	CERAMIC	0.01MF	20%		16V	C304	1-102-959-00	CERAMIC	22PF	5%		50V
C033	1-102-816-00	CERAMIC	120PF	5%		50V	C305	1-124-499-11	ELECT	1MF	20%		50V
C034	1-130-047-00	FILM	180PF	5%		50V	C306	1-123-875-11	ELECT	10MF	20%		50V
C035	1-102-942-00	CERAMIC	5PF	0.5PF		50V	C307	1-124-463-00	ELECT	0.1MF	20%		50V
C042	1-161-494-00	CERAMIC	0.022MF	30%		25V	C308	1-124-477-11	ELECT	47MF	20%		16V
C043	1-101-005-00	CERAMIC	0.022MF			50V	C309	1-101-005-00	CERAMIC	0.022MF			50V
C044	1-161-327-00	CERAMIC	0.0033MF	20%		16V	C310	1-123-875-11	ELECT	10MF	20%		50V
C046	1-161-379-00	CERAMIC	0.01MF	20%		16V	C311	1-136-171-00	FILM	0.33MF	5%		50V
C101	1-101-005-00	CERAMIC	0.022MF			50V	C312	1-130-487-00	MYLAR	0.022MF	5%		50V
C102	1-101-005-00	CERAMIC	0.022MF			50V	C313	1-124-252-00	ELECT	0.33MF	20%		50V
C103	1-124-499-11	ELECT	1MF	20%		50V	C314	1-136-171-00	FILM	0.33MF	5%		50V
C104	1-123-875-11	ELECT	10MF	20%		50V	C315	1-130-487-00	MYLAR	0.022MF	5%		50V
C105	1-162-211-31	CERAMIC	33PF	5%		50V	C316	1-124-252-00	ELECT	0.33MF	20%		50V
C106	1-101-005-00	CERAMIC	0.022MF			50V	C318	1-161-379-00	CERAMIC	0.01MF	20%		16V
C107	1-123-875-11	ELECT	10MF	20%		50V	C319	1-161-379-00	CERAMIC	0.01MF	20%		16V
C108	1-161-379-00	CERAMIC	0.01MF	20%		16V	C320	1-161-379-00	CERAMIC	0.01MF	20%		16V

Ref.No.	Part No.	Description
C401	1-124-499-11	ELECT 1MF 20% 50V
C402	1-123-382-00	ELECT 3.3MF 20% 50V
C403	1-162-288-31	CERAMIC 330PF 10% 50V
C404	1-162-294-31	CERAMIC 0.001MF 10% 50V
C405	1-162-294-31	CERAMIC 0.001MF 10% 50V
C406	1-101-361-00	CERAMIC 150PF 5% 50V
C407	1-101-361-00	CERAMIC 150PF 5% 50V
C408	1-123-875-11	ELECT 10MF 20% 50V
C409	1-124-477-11	ELECT 47MF 20% 16V
C410	1-123-875-11	ELECT 10MF 20% 50V
C503	1-162-199-31	CERAMIC 10PF 5% 50V
CF101	1-567-389-11	FILTER, CERAMIC
CF102	1-567-389-11	FILTER, CERAMIC
CF104	1-527-981-00	FILTER, CERAMIC
CNJ201	1-559-816-11	CORD (WITH CONNECTOR)
CNP002	*1-564-337-00	PIN, CONNECTOR 3P
CNP101	*1-560-060-00	PIN, CONNECTOR 2P
CNP201	*1-564-336-00	PIN, CONNECTOR 2P
CNP301	*1-560-063-00	PIN, CONNECTOR 5P
CNP302	*1-560-064-00	PIN, CONNECTOR 6P
CNP303	*1-564-341-11	PIN, CONNECTOR 7P
CT021	1-141-227-00	CAP, CERAMIC TRIMMER
CT022	1-141-227-00	CAP, CERAMIC TRIMMER
CT023	1-141-227-00	CAP, CERAMIC TRIMMER
CT024	1-141-227-00	CAP, CERAMIC TRIMMER
D001	8-719-918-45	DIODE KV1310
D002	8-719-000-26	DIODE US1060M
D003	8-719-918-45	DIODE KV1310
D004	8-719-918-45	DIODE KV1310
D021	8-719-923-64	DIODE KV1236Z
D022	8-719-923-64	DIODE KV1236Z
D101	8-719-000-26	DIODE US1060M
D201	8-719-000-26	DIODE US1060M
D202	8-719-303-13	DIODE SEL1210W
D301	8-719-933-41	DIODE HZS6C3L
D302	8-719-000-26	DIODE US1060M
D303	8-719-000-26	DIODE US1060M
D304	8-719-000-26	DIODE US1060M
D305	8-719-000-26	DIODE US1060M
D306	8-719-000-26	DIODE US1060M
D307	8-719-000-26	DIODE US1060M
D308	8-719-000-26	DIODE US1060M
D309	8-719-000-26	DIODE US1060M
D310	8-719-000-26	DIODE US1060M
D311	8-719-000-26	DIODE US1060M
D312	8-719-000-26	DIODE US1060M
D314	8-719-000-26	DIODE US1060M
D315	8-719-000-26	DIODE US1060M
D316	8-719-000-26	DIODE US1060M
D317	8-719-000-26	DIODE US1060M
D319	8-719-000-26	DIODE US1060M
D320	8-719-000-26	DIODE US1060M
D401	8-719-123-68	PH302C
D402	8-719-000-26	DIODE US1060M
D403	8-719-000-26	DIODE US1060M
D404	8-719-000-26	DIODE US1060M
FL101	1-235-126-00	ENCAPSULATED COMPONENT
IC101	8-759-801-81	IC LA1265
IC201	8-759-801-80	IC LA3401
IC301	8-759-230-50	IC TC9302AF-039

Ref.No.	Part No.	Description
IC302	8-759-230-16	IC TC9172AP
IC401	8-759-602-54	IC CX20106A
IC402	8-759-603-43	IC M50760-421P
IFT101	1-404-659-11	COIL, DISCRIMINATOR
IFT102	1-404-713-11	TRANSFORMER, IF
L001	*1-422-336-11	COIL, AIR-CORE
L002	*1-422-040-00	COIL, AIR-CORE
L003	*1-422-081-00	COIL (WITH CORE)
L004	*1-422-039-00	COIL, AIR-CORE
L005	1-459-396-00	COIL (WITH CORE)
L022	1-402-151-11	ANTENNA, FERRITE-ROD (LW/MW)
L023	1-406-089-11	COIL (OSC)
L025	1-406-207-11	COIL, LW (OSC)
L101	1-408-930-00	INDUCTOR 33MMH
L201	1-408-924-00	INDUCTOR 10MMH
L202	1-408-924-00	INDUCTOR 10MMH
L203	1-410-601-21	INDUCTOR 100UH
L401	1-410-601-21	INDUCTOR 100UH
LCD1	1-807-453-41	DISPLAY PANEL, LIQUID CRYSTAL
PL001	1-518-527-51	LAMP, PILOT
PL002	1-518-527-51	LAMP, PILOT
Q001	8-729-304-38	TRANSISTOR 2SC3391
Q002	8-729-304-38	TRANSISTOR 2SC3391
Q003	8-729-672-42	TRANSISTOR 2SC2724-C
Q004	8-729-672-42	TRANSISTOR 2SC2724-C
Q021	8-729-115-15	TRANSISTOR BN1A4M
Q022	8-729-115-33	TRANSISTOR BN1F4Z
Q023	8-729-115-15	TRANSISTOR BN1A4M
Q024	8-729-115-33	TRANSISTOR BN1F4Z
Q028	8-729-115-93	TRANSISTOR BA1F4Z
Q029	8-729-115-79	TRANSISTOR BA1A4M
Q101	8-729-672-43	TRANSISTOR 2SC2724-D
Q201	8-729-115-79	TRANSISTOR BA1A4M
Q202	8-729-115-79	TRANSISTOR BA1A4M
Q301	8-729-600-27	TRANSISTOR 2SC634SP
Q302	8-729-600-27	TRANSISTOR 2SC634SP
Q303	8-729-115-79	TRANSISTOR BA1A4M
Q304	8-729-115-15	TRANSISTOR BN1A4M
Q305	8-729-115-15	TRANSISTOR BN1A4M
Q306	8-729-115-79	TRANSISTOR BA1A4M
Q307	8-729-115-79	TRANSISTOR BA1A4M
Q309	8-729-201-56	TRANSISTOR 2SK246GR2
Q310	8-729-600-27	TRANSISTOR 2SC634SP
Q311	8-729-201-56	TRANSISTOR 2SK246GR2
Q312	8-729-600-27	TRANSISTOR 2SC634SP
Q401	8-729-600-27	TRANSISTOR 2SC634SP
Q402	8-729-600-27	TRANSISTOR 2SC634SP
R001	1-249-441-11	CARBON 100K 5% 1/4W
R002	1-215-491-00	CARBON 820K 5% 1/4W
R003	1-249-401-11	CARBON 47 5% 1/4W
R004	1-249-401-11	CARBON 47 5% 1/4W
R005	1-249-441-11	CARBON 100K 5% 1/4W
R006	1-215-491-00	CARBON 820K 5% 1/4W
R007	1-249-411-11	CARBON 330 5% 1/4W
R008	1-249-405-11	CARBON 100 5% 1/4W
R009	1-249-429-11	CARBON 10K 5% 1/4W

Ref.No. Part No. Description

R010	1-249-429-11	CARBON	10K	5%	1/4W
R011	1-249-422-11	CARBON	2.7K	5%	1/4W
R012	1-249-431-11	CARBON	15K	5%	1/4W
R013	1-215-483-00	CARBON	390K	5%	1/4W
R014	1-249-405-11	CARBON	100	5%	1/4W
R021	1-249-429-11	CARBON	10K	5%	1/4W
R024	1-249-429-11	CARBON	10K	5%	1/4W
R025	1-249-429-11	CARBON	10K	5%	1/4W
R029	1-249-429-11	CARBON	10K	5%	1/4W
R030	1-249-429-11	CARBON	10K	5%	1/4W
R036	1-249-411-11	CARBON	330	5%	1/4W
R037	1-249-437-11	CARBON	47K	5%	1/4W
R038	1-247-903-00	CARBON	1M	5%	1/4W
R101	1-215-491-00	CARBON	820K	5%	1/4W
R102	1-249-411-11	CARBON	330	5%	1/4W
R103	1-249-434-11	CARBON	27K	5%	1/4W
R104	1-249-423-11	CARBON	3.3K	5%	1/4W
R105	1-249-426-11	CARBON	5.6K	5%	1/4W
R106	1-249-404-00	CARBON	82	5%	1/4W
R107	1-249-429-11	CARBON	10K	5%	1/4W
R108	1-249-429-11	CARBON	10K	5%	1/4W
R109	1-249-413-11	CARBON	470	5%	1/4W
R110	1-249-423-11	CARBON	3.3K	5%	1/4W
R111	1-249-420-11	CARBON	1.8K	5%	1/4W
R201	1-249-423-11	CARBON	3.3K	5%	1/4W
R202	1-249-437-11	CARBON	47K	5%	1/4W
R203	1-249-437-11	CARBON	47K	5%	1/4W
R204	1-249-417-11	CARBON	1K	5%	1/4W
R205	1-249-437-11	CARBON	47K	5%	1/4W
R206	1-249-437-11	CARBON	47K	5%	1/4W
R207	1-249-437-11	CARBON	47K	5%	1/4W
R208	1-249-437-11	CARBON	47K	5%	1/4W
R209	1-249-419-11	CARBON	1.5K	5%	1/4W
R210	1-249-419-11	CARBON	1.5K	5%	1/4W
R211	1-249-441-11	CARBON	100K	5%	1/4W
R212	1-249-441-11	CARBON	100K	5%	1/4W
R302	1-249-419-11	CARBON	1.5K	5%	1/4W
R303	1-249-435-11	CARBON	33K	5%	1/4W
R304	1-249-441-11	CARBON	100K	5%	1/4W
R305	1-249-435-11	CARBON	33K	5%	1/4W
R306	1-249-435-11	CARBON	33K	5%	1/4W
R307	1-249-423-11	CARBON	3.3K	5%	1/4W
R308	1-249-425-11	CARBON	4.7K	5%	1/4W
R309	1-249-417-11	CARBON	1K	5%	1/4W
R310	1-249-405-11	CARBON	100	5%	1/4W
R311	1-249-405-11	CARBON	100	5%	1/4W
R312	1-249-437-11	CARBON	47K	5%	1/4W
R313	1-249-414-11	CARBON	560	5%	1/4W
R314	1-249-421-11	CARBON	2.2K	5%	1/4W
R315	1-249-435-11	CARBON	33K	5%	1/4W
R316	1-249-416-11	CARBON	820	5%	1/4W
R317	1-249-410-11	CARBON	270	5%	1/4W
R318	1-249-425-11	CARBON	4.7K	5%	1/4W
R319	1-249-425-11	CARBON	4.7K	5%	1/4W

Ref.No. Part No. Description

R320	1-249-437-11	CARBON	47K	5%	1/4W
R321	1-247-885-00	CARBON	180K	5%	1/4W
R322	1-249-414-11	CARBON	560	5%	1/4W
R323	1-249-416-11	CARBON	820	5%	1/4W
R324	1-249-410-11	CARBON	270	5%	1/4W
R325	1-249-421-11	CARBON	2.2K	5%	1/4W
R326	1-249-425-11	CARBON	4.7K	5%	1/4W
R327	1-249-425-11	CARBON	4.7K	5%	1/4W
R401	1-249-389-11	CARBON	4.7	5%	1/4W
R402	1-215-476-00	CARBON	200K	5%	1/4W
R403	1-249-433-11	CARBON	22K	5%	1/4W
R404	1-249-411-11	CARBON	330	5%	1/4W
R405	1-249-429-11	CARBON	10K	5%	1/4W
R406	1-249-429-11	CARBON	10K	5%	1/4W
R407	1-249-417-11	CARBON	1K	5%	1/4W
R408	1-249-417-11	CARBON	1K	5%	1/4W
R409	1-249-429-11	CARBON	10K	5%	1/4W
R411	1-249-429-11	CARBON	10K	5%	1/4W
R412	1-249-429-11	CARBON	10K	5%	1/4W
R413	1-249-429-11	CARBON	10K	5%	1/4W
R414	1-249-429-11	CARBON	10K	5%	1/4W
R415	1-249-429-11	CARBON	10K	5%	1/4W
R416	1-247-903-00	CARBON	1M	5%	1/4W
R417	1-249-423-11	CARBON	3.3K	5%	1/4W
R418	1-249-437-11	CARBON	47K	5%	1/4W
TB001	*1-537-138-21	TERMINAL BOARD (ANT)			
RT101	1-228-996-00	RES, ADJ, CARBON 47K			
S301	1-554-303-21	SWITCH, KEY BOARD			
S302	1-554-303-21	SWITCH, KEY BOARD			
S303	1-554-303-21	SWITCH, KEY BOARD			
S304	1-554-303-21	SWITCH, KEY BOARD			
S305	1-554-303-21	SWITCH, KEY BOARD			
S306	1-554-303-21	SWITCH, KEY BOARD			
S307	1-554-303-21	SWITCH, KEY BOARD			
S308	1-554-303-21	SWITCH, KEY BOARD			
S309	1-554-303-21	SWITCH, KEY BOARD			
S310	1-554-303-21	SWITCH, KEY BOARD			
S311	1-554-303-21	SWITCH, KEY BOARD			
S312	1-554-303-21	SWITCH, KEY BOARD			
S313	1-570-876-11	SWITCH, KEY BOARD			
S314	1-570-876-11	SWITCH, KEY BOARD			
S315	1-570-876-11	SWITCH, KEY BOARD			
S316	1-570-876-11	SWITCH, KEY BOARD			
S317	1-570-876-11	SWITCH, KEY BOARD			
X201	1-567-250-11	OSCILLATOR, CERAMIC			
X301	1-567-736-11	VIBRATOR, CRYSTAL			
X401	1-527-532-00	OSCILLATOR, CERAMIC			